

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

1 1. (Original) A computer-implemented automated decision support system for
2 designing an auction for a given item, comprising:
3 a structure extractor that estimates unknown elements of market structure of the auction
4 based on auction characteristics data extracted from historical auctions for similar items and a
5 bidding model matching the extracted auction characteristics data;
6 a bidding behavior predictor that predicts bidding behaviors of bidders in the auction
7 based on the estimated unknown elements of market structure and characteristics of the auction;
8 an optimizer that employs an evaluation criterion to generate an evaluation of the auction
9 based on (1) the estimated unknown elements of market structure and (2) the predicted bidding
10 behavior of bidders.

1 2. (Original) The system of claim 1, further comprising a report generator coupled
2 to the optimizer and the structure extractor to generate a report from the evaluation of the
3 auction.

1 3. (Original) The system of claim 1, wherein the optimizer selects the best auction
2 design candidates from the evaluation of the auction, and sends these best auction design
3 candidates to an external auction implementation system to implement the auction.

1 4. (Original) The system of claim 3, wherein the optimizer sends the best auction
2 design candidates to the external auction implementation system via the Internet.

1 5. (Original) The system of claim 1, further comprising
2 a historical auction data repository that stores historical auction data for a plurality of
3 historical auctions of a plurality of items, including items similar to the given item;
4 a bidding model repository that stores a plurality of bidding models.

1 6. (Original) The system of claim 1, wherein the structure extractor further
2 comprises
3 a data selection module that accesses an external historical auction data repository for the
4 auction characteristics data of the historical auctions for the items similar to the given item based
5 on an user input of the given item to be auctioned;
6 a bidding model selection module that selects, from an external bidding model repository,
7 the bidding model matching the auction characteristics data;
8 a structure estimation module that combines the extracted auction characteristics data and
9 the bidding model to estimate the unknown elements of market structure of the auction.

1 7. (Currently Amended) The system of claim 6, wherein the auction characteristics
2 data are part of [[the]] auction mechanism data that also include bid data, wherein the structure
3 estimator estimates the unknown elements by
4 applying the bid data to the bidding model to invert the bidding model so as to express
5 unobservable variables in the bidding model in terms of the ~~observable~~ bid data;
6 applying a statistical density estimation technique to the expression so as to obtain an
7 estimate of the unknown elements.

1 8. (Original) The system of claim 1, wherein the behavior predictor further
2 comprises
3 a bidding model selection module that selects, from an external bidding model repository,
4 the bidding model matching the characteristics of the auction, wherein the characteristics of the
5 auction is a user input;
6 a behavior prediction module that predicts the bidding behaviors of bidders in the auction
7 by applying the estimated unknown elements of market structure into the extracted bidding
8 model matching the user input of auction characteristics of the auction.

1 9. (Currently Amended) The system of claim 1, wherein the optimizer further
2 comprises
3 an outcome prediction module that receives a user input evaluation criterion and a user
4 input of ~~eandidate auction decisions~~ decision candidates to provide prediction for each of the
5 ~~eandidate auction decisions~~ decision candidates using the evaluation criterion and based on (1)
6 the estimated unknown elements and (2) the predicted bidding behavior of bidders;
7 an optimal decision module that ranks the evaluation for each of the ~~eandidate auction~~
8 ~~decisions~~ decision candidates.

1 10. (Original) A computer-implemented method for providing an automated auction
2 analysis, comprising:
3 estimating unknown elements of market structure of the auction based on auction
4 characteristics data extracted from historical auctions for similar items and a bidding model
5 matching the extracted auction characteristics data;
6 predicting bidding behaviors of bidders in the auction based on the estimated unknown
7 elements of market structure and characteristics of the auction;
8 employing an evaluation criterion to generate an evaluation of the auction based on (1)
9 the estimated unknown elements of market structure and (2) the predicted bidding behavior of
10 bidders.

1 11. (Original) The method of claim 10, further comprising the step of generating a
2 report from the evaluation of the auction.

1 12. (Original) The method of claim 10, further comprising the steps of
2 selecting the best auction design candidates from the evaluation of the auction;
3 sending these best auction design candidates to an external auction implementation
4 system to implement the auction.

1 13. (Original) The method of claim 12, wherein the best auction design candidates
2 are sent to the external auction implementation system via the Internet.

1 14. (Original) The method of claim 10, wherein the step of estimating the unknown
2 elements of market structure of the auction further comprises
3 accessing an external historical auction data repository for the auction characteristics data
4 of the historical auctions for the items similar to the given item based on an user input of the
5 given item to be auctioned;
6 selecting, from an external bidding model repository, the bidding model matching the
7 auction characteristics data;
8 combining the extracted auction characteristics data and the bidding model to estimate
9 the unknown elements of market structure of the auction.

1 15. (Currently Amended) The method of claim 14, wherein the step of combining the
2 extracted auction characteristics data and the bidding model further comprises the steps of
3 applying bid data to the bidding model to invert the bidding model so as to express
4 unobservable variables in the bidding model in terms of the ~~observable~~ bid data;
5 applying a statistical density estimation technique to the expression so as to obtain an
6 estimation of the unknown elements.

1 16. (Original) The method of claim 10, wherein the step of predicting bidding
2 behaviors of bidders in the auction further comprises the steps of
3 selecting, from an external bidding model repository, the bidding model matching the
4 characteristics of the auction, wherein the characteristics of the auction is a user input;
5 predicting the bidding behaviors of bidders in the auction by applying the estimated
6 unknown elements of market structure into the extracted bidding model matching the user input
7 of auction characteristics of the auction.

1 17. (Original) The method of claim 10, wherein the step of employing an evaluation
2 criterion to generate an evaluation of the auction further comprises the steps of
3 receiving a user input evaluation criterion and a user input of candidate auction decisions
4 to provide prediction for each of the candidate auction decisions using the evaluation criterion
5 and based on (1) the estimated unknown elements and (2) the predicted bidding behavior of
6 bidders;
7 ranking the evaluation for each of the candidate auction decisions.

1 18. (New) The system of claim 1, wherein the bidding model comprises one of an
2 English auction bidding model, a Dutch auction bidding model, a first-price-sealed bid bidding
3 model, and a Vickrey auction bidding model.

1 19. (New) The system of claim 1, wherein the auction characteristics data describe at
2 least a reserve price of the given item, an auction format, and a number of bidders.

1 20. (New) The system of claim 1, the bidding behavior predictor to receive as input
2 plural auction decision candidates that correspond to different types of auctions, wherein the
3 bidding behavior predictor predicts bidding behaviors for the plural auction decision candidates.

1 21. (New) The method of claim 10, wherein estimating the unknown elements of the
2 market structure of the auction is based on the bidding model selected from the group consisting
3 of an English auction bidding model, a Dutch auction bidding model, a first-price-sealed bid
4 bidding model, and a Vickrey auction bidding model.

1 22. (New) The method of claim 10, wherein estimating the unknown elements of the
2 market structure of the auction is based on the auction characteristics data including at least a
3 reserve price of the given item, an auction format, and a number of bidders.

- 1 23. (New) The method of claim 10, further comprising receiving as input plural
- 2 auction decision candidates that refer to different types of auctions, wherein predicting the
- 3 bidding behaviors comprises predicting bidding behaviors for the plural auction decision
- 4 candidates.